

Ohio Agricultural Experiment Station.

BULLETIN 98.

WOOSTER, OHIO, JANUARY, 1899.

SMALL FRUITS.

CULTURAL NOTES AND COMPARISON OF VARIETIES.

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BULLETIN

OF THE

Ohio Agricultural Experiment Station.

NUMBER 98.

JANUARY, 1899.

SMALL FRUITS: CULTURAL NOTES AND COMPARISON OF VARIETIES.

By W. J. GREEN.

WATER IN STRAWBERRY CULTURE.

Some statements, made in a former bulletin, concerning the necessity of water in strawberry culture, have been so often quoted as to show a general and wide-spread interest in the matter.

In order to facilitate a clearer presentation of the results of a recent experiment in soil culture some of the statements made in Bulletin 85 are here quoted:

Strawberry plants require an abundance of moisture in all stages of growth, but this is most easily secured during the first season by attending to the proper details in preparation of the soil, and in cultivation.

Early and continuous cultivation saves the moisture to a greater extent than is commonly supposed. It has been found that the loss of moisture from unplowed ground may be in excess of that from cultivated soil to an amount equal to an inch and three fourths of rainfall in a week. A man with a team and a sprinkling cart could not replace the water on an acre of land as fast as it escapes by evaporation from the soil, when it goes off at that rate, if he had to haul the water one fourth of a mile. The importance of stirring the soil soon after a shower is generally known; but in practice, cultivation after slight showers is often neglected. This is because the soil does not become compact and no crust forms after slight showers, hence the necessity of stirring the soil at once is not apparent.

A slight wetting of dry soil, however, increases the upward flow of water, hence there is more water added to the surface soil at such times than comes in the form of rain.

The sun and wind soon dissipate the slight rainfall and along with it much of the water which came from the lower layers of the soil, leaving the soil dryer than before.

As the two are commonly used, a cultivator is a better machine for irrigating than a sprinkling cart. The cultivator, if rightly used, saves moisture, while the sprinkling cart is more likely than not to be the means of wasting it.

In 1897 an experiment was undertaken in the cultivation of strawberries. One plot was hoed just often enough to keep down weeds, and another was treated in the same manner, except that a cultivator instead of a hoe was used. No regard was had, in either case, to weather conditions, but the work was done when it became necessary to prevent the weeds from getting a start. Another plot was cultivated at least twice a week, when the weather permitted, and in every case as soon after a rain as was possible. In case of very light showers the ground was cultivated soon afterwards, or before the sun and wind had a chance to dry out the soil.

Soil samples, to the depth of one foot, were taken at intervals during the season and the percent of moisture was determined by the chemist. Although the rainfall, during almost the entire season, was abundant, there were marked differences between the cultivated and uncultivated plots in the amount of moisture, and corresponding differences in the growth of the plants. There were times, after heavy rains, when the soil of all of the plots held sufficient moisture, but in dry weather the loss of moisture from the hoed plot was much more rapid than from either of the cultivated plots. The plot which was given thorough cultivation held more moisture during the entire season than either of the others, the excess amounting at times to nearly five hundred barrels of water more per acre than the hoed plot contained; the equivalent of about half an inch of water, or a moderate rainfall.

The difference in growth of the plants on the various plots was less than it would have been in a dry season, and yet was easily discernible. The plants on the hoed plot made a growth almost sufficient to form a matted row, while those in the plot receiving moderate cultivation formed a row of about the right proportions, and those in the plot which received thorough cultivation set too many plants.

An effort to produce a uniform stand of plants in the different rows was only partially successful, hence the result of the experiment was not quite what the growth of the plants on the different plots seemed to indicate. In other words, the result was more in favor of the hoed plot than would have been the case had it been possible to have approximately the same number of plants on each plot.

The varieties in the plots were Tennessee Prolific, Haverland and Warfield. The difference in growth and yield of the Tennessee Prolific plants on the different plots was very marked, being 68 per cent in favor of the thoroughly cultivated plot as compared with the hoed plot. Haverland and Warfield showed a gain of 10 and 14 per cent, respectively. The difference in the varieties is accounted for, mostly, by their plant making capacities. Tennessee Prolific plants formed a good row on

the thoroughly cultivated plot, while there were vacancies in the row on the hoed plot. Haverland and Warfield, as before stated, set too many plants in the row of the thoroughly cultivated plots, while the hoed rows were nearly as well stocked with plants as they should be. Had the plants been kept in hills the result of the experiment would have been more decisive. On the whole, the experiment was satisfactory, for it showed that thorough tillage is profitable, even at the lowest per cent of increase; viz., 10 per cent in case of the Haverland, which was obtained at a cost of about two per cent of the crop.

The cost of the extraordinary, above the ordinary tillage, may be reckoned at three to four dollars per acre, varying, of course, according to circumstances and conditions, hence it is plain that a very small increase in the crop will pay for the cost of the extra tillage.

Considering the unfavorable conditions under which this experiment was conducted it seems reasonable to infer that extra tillage, if done at the right time and in the right manner, will yield a profit in strawberry culture.

The practice of passing between narrow strawberry rows, at frequent intervals, with a cultivator, is attended with certain difficulties of a practical nature, which, if not overcome, may defeat the purpose sought. The outer teeth of most five-tooth cultivators throw too much dirt against the row, soon forming a ridge, and after the soil of the ridge becomes somewhat compact the teeth leave an open furrow on either side of the row. When left in this shape the soil in the row dries out quickly. A cultivator with harrow teeth is less objectionable than the ordinary form, but a better plan is to substitute for the cultivator, at least half of the time, a plank clod crusher. It is made in the usual manner, but is just wide enough to go between the rows, and has handles with which to guide it. If this tool is used as often as may be, and the cultivator employed only when necessary, in order to break the crust, much better work will be done, and at less cost than can be done with the cultivator alone. As left by this tool the soil not only loses less moisture but is less liable to wash than when thrown up in ridges by the cultivator. A weeder may be used for the same purpose, and is more expeditious, but does not do quite as good work on heavy soil.

No experiments have been undertaken with raspberries or blackberries to determine the effect of cultivation, but there can be no doubt that the results would be similar. Both these crops suffer greatly in time of drought, the blackberry being particularly sensitive to dry weather in fruiting time. In order to accomplish the best results in cultivating these crops the ordinary plan needs modification. The time when thorough cultivation will do the most good is just before, and during the time, when the fruit is ripening. To get the best results the soil needs to be stirred after each picking, and as close to the plants as possible, without brushing off the fruit. It is evident that this cannot

be done unless the plants are tied to some support. The cultivator may be run between the rows, in any case, but not close enough to have the desired effect if the pruning and training are done in the ordinary manner. To tie the canes to wires is somewhat expensive, but is more than repaid in keeping the fruit from the ground and in facilitating cultivation. If this method is followed black raspberry plants should be topped, in summer, as by the ordinary plan, but about a foot higher from the ground. Red raspberry and blackberry plants should not be topped in summer, but allowed to grow to full height and about half of the previous season's growth removed in the spring.

The rows should be kept very narrow, also; the plants being restricted to about eight inches. If this method of training is practiced and the cultivator, or clod crusher, is used at least twice a week, the size of the berries and number of bushels will be greatly increased.

COMPARISON OF VARIETIES.

STRAWBERRIES.

The season of 1898 was unfavorable for experimental work with strawberries. The weather was very warm and the rainfall abundant during nearly all of the period of fruiting, hence the conditions were just right for rapid development. In consequence the crop matured in a very short time and the interval between the date of ripening of different sorts was less than usual. Indeed, there seemed to be almost no difference in the time of ripening of many varieties that are usually several days apart. The short period of ripening reduced the crop, for the berries did not fill out and attain their usual size. For this reason it can hardly be expected that an account of the behavior of varieties will be fully satisfactory. No doubt much that is said will need revision. Inasmuch as a report on strawberries was made in 1897 it is not thought best to repeat much that was said then, except to enforce or to correct statements then made, hence the brevity of this report.

Beauty: (perfect) — This variety was reported upon favorably in 1897 and its behavior the past season indicates that it is a desirable acquisition. The plants are healthy and sufficiently prolific, while the berries are large and a beautiful, glossy scarlet. It is particularly desirable for home use.

Bennett's No. 1: (imperfect) — from L. W. Bennett. Plants vigorous and quite prolific; berries medium size, conical, uniform and regular; dark scarlet, sometimes with white tips, quite firm. Has been on trial two seasons, and has proved quite satisfactory.

Berry's No. 2: (imperfect) — from P. D. Berry. Plants vigorous, healthy and prolific; berries medium to large, conical, regular, but somewhat variable in size; light scarlet; fresh light red and rather soft. Promising for near market and for home use.

Bouncer: (imperfect) — Plants vigorous and healthy but only moderately prolific; berries medium to large, irregular and often cockscombed; scarlet, evenly colored; flesh nearly white; firm and of fair quality. Not sufficiently prolific for market, and too low in quality to be specially recommended for home use.

Brownie: (imperfect) — Plants dark green, healthy and quite prolific; berries large conical but often wedge-shaped; dark scarlet, glossy; very beautiful; flesh red, firm and of good quality. Very late in ripening. Appears to be promising as a fancy market variety and for home use. It has been on trial here one season only, but the plants appear to be so rugged that it seems not unreasonable to expect something more than ordinary of it. It may become a strong competitor of the Brandywine, as it ripens at about the same time and the berries are larger.

Clyde: (perfect) — The favorable report given in 1897 concerning this variety does not seem to need modification. The plants are healthy and uncommonly prolific. The berries are large enough and are sufficiently firm for near market. Although rather soft it was noted that fewer berries of this variety spoiled on the plants than of many others, which appeared to be firmer. The color is not quite as dark as desirable, but there can be no doubt that it will sell at a fair price in almost any market, while the berries are of fair size but not large enough to be ranked as fancy. It appears to be in nearly every respect a variety which is just suited to the wants of the ordinary commercial grower. It is probably the most prolific perfect-flowering variety in existence. While it is a vigorous grower and the plants have a tendency to mat too thickly in the row the berries do not seem to be small in consequence. It holds out well toward the end of the season; much better, in fact, than many other varieties which are less prolific. While not of highest quality it can be recommended for home use, and growers for market need not hesitate to plant largely of it.

Darling: (perfect) — An early variety which gives fairly good results the first part of the season, yielding one or two good pickings. After that the berries run very small. It cannot be recommended as worthy of further trial.

Earhart, W. H.: (perfect) — An unnamed variety which was reported upon in 1897. Nothing new can be said concerning it. It appears, as then stated, to be much like the Sharpless but seems to color better and is probably more prolific.

Early Sunrise: (perfect) — An early variety, which appears to be almost identical with Michel's Early. It does not appear to be superior to that variety in any respect.

Enormous: (imperfect) — Our former reports concerning this variety were favorable, and there seems to be no reason to make any change in previous statements. The plants are healthy and prolific. The berries

are large, well colored and of good quality and good form. It is more prolific than Bubach while the berries are scarcely less beautiful in appearance. It can hardly fail to become a popular market variety and will probably take the place of Bubach where that variety does not succeed.

Gardener: (perfect) — This variety has been on trial only one season but appears to be quite promising. The berries are rather larger than the Clyde and the plants are nearly as prolific, but the berries do not hold out in size so well to the end of the season and are quite soft.

Gertrude: (perfect) — This variety has not come up to expectations here. Many of the berries are large but they vary somewhat in size and shape, hence do not present a good appearance. The berries run quite small toward the end of the season and the plants do not appear to be prolific.

Glen Mary: (perfect) — Plants vigorous and prolific. The berries are large, finely colored, somewhat irregular but rather soft. It is prolific but not quite equal to the Clyde, although perhaps a little larger. Its large size and excellent quality fit it admirably for the home garden. It will answer very well for near market but is too soft for distant shipment.

Granville: (perfect) — This variety gave us some very fine berries the past season. They are large, uniform and regular in shape, beautifully colored and glossy. Although the berries do not always color evenly they are very attractive in appearance and excellent in quality. It may be recommended as a choice variety for home use.

Garvin, D. B.: (perfect) — An unnamed variety which has been on trial one season. Plants healthy, moderately vigorous and quite prolific. Berries of large size, somewhat variable in form but not irregular, and quite uniform. Dark scarlet, but not all evenly colored. Flesh light red, quite firm and of good quality. This variety seems to have some excellent qualities and may be ranked as promising for home use and for near market.

Hall's Favorite: (perfect) — A variety recently introduced. It has been on trial here several seasons and has always given satisfactory results. The plants are prolific, the berries medium to large in size, nicely colored and early in ripening. It is promising as an early market variety, although a few days later than the Luther and Crescent.

Herald: (perfect) — Plants very vigorous but only moderately prolific. Berries are very irregular in shape and variable in size, and do not color uniformly. It has been on trial here two seasons and while it seems to be a remarkable variety in some respects the fact that it does not color evenly is very much against it. It needs very high culture to bring it to perfection.

Hillyard, W. H.: (perfect) — An unnamed variety which has been on trial two seasons. The plants are vigorous and prolific but somewhat inclined to rust. The berries have the appearance of the Chas. Downing. It may be an improvement upon that variety, as the berries seem to be larger, but it appears to have the same faults of being unproductive and subject to the rust.

Hoosier: (perfect) — Plants seem to lack vigor but are fairly prolific. The berries are large, and quite uniform, but often flattened or wedge-shaped. It is not probable that the variety will succeed generally because of its feeble growth.

Ima: (imperfect) — Plants are quite vigorous in growth but considerably affected by rust. The berries are conical, regular, uniform, quite firm and of fair quality. This variety has been on trial one season only, but the plants suffer so much from rust as to make it impossible to give a satisfactory opinion concerning the variety.

Jerry Rusk: (perfect) — Plants healthy but only moderately vigorous; apparently quite prolific. The berries are large but vary considerably in size and are rather irregular but not cockscombed. Although the variety seems to possess considerable merit it does not appear to have done as well here as in some other localities. Its lack of vigor seems to be its greatest fault.

Jersey Market: (imperfect) — While the plants are vigorous, healthy and prolific the berries are too small to make it a desirable variety. The berries of the first picking are usually medium to large, but after that they run very small.

Lady Thompson: (perfect) — This variety seems to be well regarded in some sections but it has given unsatisfactory results here. Although quite early, the plants are not sufficiently prolific, and the berries vary too much in size. The plants seem to be considerably affected by rust and do not make a satisfactory growth.

Lehman, S. J.: (perfect) — An unnamed variety which has been on trial two seasons. Plants vigorous and prolific, berries medium to large, uniform and regular, bright scarlet and quite firm. This seems to be a promising variety because of its prolificacy and uniform, brightly colored berries.

Leffel, A. D.: (imperfect) — Plants vigorous and prolific. Berries large, regular and well colored. Although not sufficiently tested this seems to be a promising variety.

Luther: (perfect) — This variety has been on trial four seasons and has uniformly given good results, the only fault discovered thus far being a tendency of the foliage to rust, which was observed the past season for the first time. The rust did not seem to injure the plants sufficiently to detract from the crop to any extent, however. The plants

are vigorous and prolific, the berries are medium to large, somewhat irregular in shape but quite uniform in size. The principal merit in this variety is in its earliness, being about one picking later than the Michel's Early. The berries not only commence to ripen at an early date but the pickings are large from the start, which may be regarded as a merit in an early variety. The berries are rather soft, but firm enough for near market, ripening at about the same time as the Crescent, which would make it an excellent mate for that variety. Where early berries are desirable this variety can hardly fail to give satisfaction.

Marguerite: (imperfect) — Plants moderately vigorous, healthy and prolific. Berries medium to large, rather uneven in size and not always well colored; rather soft. Color a bright, glossy scarlet, except a few, which are pale. Lack of firmness seems to be the greatest fault of this variety, but it will undoubtedly do for near market and for home use. When well grown the berries are attractive in appearance.

Margaret: (perfect) — This variety is frequently confused with the above and, for some unknown reason, many dealers have catalogued it under the name Marguerite. The two varieties are entirely distinct, however. Margaret is a fine variety when given high cultivation. The berries are uniformly large, highly colored and very attractive in appearance. It does not appear to succeed under all conditions but is a variety well worthy of trial.

Marietta: (perfect) — Plants vigorous, healthy and fairly prolific. Berries medium to large, uniform and regular, light scarlet, flesh light red and quite firm. In many respects a promising variety, principally because of large size and firmness, making it valuable for the market.

Mumma, A. L.: (perfect) — An unnamed variety, on trial two seasons. Plants vigorous, healthy and prolific. Berries medium to large, uniform in size, regular, light red, flesh nearly white, rather soft. A very promising variety, except for the light color of the berries. Would do very well for home use and possibly for some markets.

Noland: (imperfect) — On trial one season only. Plants vigorous and prolific. Berries medium to large, uniform in size, quite firm, light red, but sometimes not fully colored. This appears to be a promising variety, because of its prolificacy. As seen on the grounds of the originator it was very promising. Further trial is needed to determine its value for general cultivation.

Orewiler, H.: (imperfect) — An unnamed variety which has been tested two seasons. A favorable report was given of it in 1897, and its behavior last season indicates that it is worthy of commendation. The plants are healthy and prolific, while the berries are large, beautifully colored and sufficiently firm for near market. Its season for ripening is medium and it continues long in bearing, the berries holding up well in size to the last.

Pride of Cumberland: (perfect) — Plants moderately vigorous and fairly prolific. Berries medium size, conical, regular, uniform, bright scarlet. While this variety seems to possess many good qualities as a market sort it does not, however, seem to be anything extraordinary. The berries are not large enough to compare favorably with many other varieties which are quite as prolific, nor does it seem to be prolific enough to make up for under size.

Pride of Ohio: (perfect) — Plants only moderately vigorous and prolific. Berries mostly medium size but many small; dark scarlet, quite firm. Although this variety has been on trial two seasons it has not given results here to warrant commendation.

Ran Beauoy: (perfect) — Plants only moderately vigorous; fairly prolific. Berries large, mostly cockscombed, not evenly colored, flesh white, firm, rather acid. Although the berries of this variety are large and quite attractive in appearance the plants are weak in growth.

Rio: (perfect) — This has given quite general satisfaction as an early variety nor can any fault be found with its behavior here. It begins to ripen about the same time as the Luther; but, in every case, where comparisons were made, the first pickings of the Luther were larger than the Rio. The two begin to ripen at about the same time but preference is given to the Luther as an early variety because of the fact above stated.

Ruby: (imperfect) — As previously reported, this variety has always been satisfactory here, and ranks as one of the best late market varieties. It is valuable because of high color, uniformly large size and firmness.

Sample: (imperfect) — This variety has been on trial one season only, but it was uncommonly satisfactory. The plants are vigorous and prolific. The berries are large, uniform in size and very attractive in appearance. It seems safe to recommend it as a promising market variety because of its attractiveness, large size and beauty. It seems to be sufficiently firm for distant shipment and there can, at least, be no doubt that it will answer admirably for near market.

Seaford: (imperfect) — Plants healthy and moderately prolific. Berries medium to large, uniform in size but not always well colored; rather soft. It is doubtful if this variety will rank high enough in productiveness to answer the requirements of a market variety.

Shockley, W. H.: (perfect) — Plants resemble Michel's Early, but are apparently more prolific. Berries about the same size and a little darker in color than Michel's Early. It may possibly be an improvement upon that variety, but it appears to possess the same fault, of nonproductiveness and small size of berries.

Superb: (perfect) — Plants healthy, vigorous and moderately productive. Berries medium large, uniform in size, regular, bright scarlet;

flesh light red, quite firm and of good quality. This variety has been on trial two seasons, and, although rated as moderately prolific, it yields a sufficiently heavy crop to constitute it a profitable market variety. The berries are quite firm and of excellent quality, making it a desirable variety, not only for market but for home use. In quality it ranks almost, if not quite equal to Brunette and Marshall. The berries are about the size of those of the Brunette and nearly as dark in color. On the whole, it is a variety of more than ordinary promise and will meet the requirements of those who desire to produce berries for a discriminating market.

Trophy: (perfect) — Plants vigorous, healthy and moderately prolific. Berries mostly large, regular and uniform in size, light red, glossy; flesh nearly white, firm and of fair quality. Although this variety has some excellent qualities its color is objectionable and it can hardly take rank among profitable market sorts, and is hardly up to the standard in quality for home use.

Valentine, T. K.: (perfect) — Plants vigorous but not prolific. Berries variable in size and irregular in shape, light red but unevenly colored; flesh light red, quite firm. Not sufficiently prolific to be recommended.

RASPBERRIES.

Buckeye: This is a large, late black-cap of considerable promise. It resembles the Gregg closely in almost every particular, but the berries are a trifle larger than those of the Gregg. Whether it will supersede the Gregg is a question, but it is worthy of general trial.

Conrath: A highly esteemed black-cap in some localities. It is not quite as early as Eureka and does not seem to be any improvement on the Kansas.

Cumberland: This black-cap has not been fully tested here, but in growth it seems to be very satisfactory; fully equal to any other variety on trial. The berries are very large but we have not been able to test its comparative productiveness.

Eureka: This may now be regarded as one of the best of the early black-cap varieties. The plants are vigorous and prolific; the berries large and hold their size well to the end of the season. No weakness has been observed in the variety here except a susceptibility to the anthracnose; but this was manifested one season only and the plants quickly recovered from its effects. Regarding the behavior of the variety elsewhere there have been conflicting reports; some praise it very highly and others condemn it. Its large size and earliness make it a valuable variety and while it may not do well in all localities it is worthy of general trial.

Haymaker: A purple-cap variety of recent origin. This variety, although resembling the Columbian, is quite distinct from that variety

in many particulars. It appears to be as much superior to the Columbian as the Columbian is to the Shaffer. The plants are extremely vigorous and uncommonly prolific; the berries very large, purple in color and quite firm. Judging from its behavior here, and on the grounds of the originator, it is an uncommonly promising variety and will no doubt prove to be valuable for canning.

Kansas: This variety seems to be growing steadily in favor and must now be rated as the leading mid-season black-cap. It is a little later than the Eureka and possibly more prolific, although the difference does not seem great. At any rate, it can be safely planted by those who wish a reliable market variety.

King: A mid-season red variety, which has been favorably reported upon in previous years. It has fully sustained its former record and may now be safely recommended as a variety worthy of general trial. The plants are vigorous, prolific and hardy, while the berries are large, bright in color and quite firm. The only fault observed here is that the berries drop too easily.

London: A moderately vigorous and quite prolific variety. About the same size and season of ripening as the Cuthbert, and said to be superior to that variety in hardiness. It has not been winter killed here, nor has the Cuthbert, during the time that the London has been on trial. No doubt it can be safely planted in any part of the state, but the Cuthbert is not hardy in many sections.

Lotta: A black-cap a few days earlier than the Gregg. In most other respects it is comparable to that variety and perhaps has less of the objectionable bloom than the Gregg. It is, at any rate, an excellent medium to late variety, being large, vigorous and prolific.

Munger: This is a new variety, closely resembling the Gregg and it is still a question if it is any improvement upon that variety. Possibly it may be hardier, as has been claimed, and if so it will become a popular market variety.

BLACKBERRIES.

Early King: While not a new variety the Early King seems to be almost unknown, and but little cultivated. Its chief merit is earliness, being only a few days later than the Early Harvest. It is considerably larger than that variety and much hardier also. It is about the size of the Snyder, nearly as hardy, and almost as productive.

It possesses many of the attributes of a good commercial variety for this latitude, and no doubt would be found to be more profitable in many sections than Snyder, Eldorado or any of the later sorts. It is excellent for home use also, having a moderate amount of acid only, and almost none of the hard core so common with many varieties.

Eldorado: This is now recognized as the leading hardy variety. It is quite as hardy as the Snyder, equal to it in productiveness, a little

larger and of better quality. Thus it ranks above the Snyder in those attributes requisite in a variety both for home use and for market.

Erie and Ohmer: These resemble each other closely. They are excellent varieties but not quite hardy in this latitude, being about equal to the Lawton in this particular.

Lovett: This is by far the finest of the half hardy sorts. The berries are larger than the Lawton and excellent in quality, but unfortunately the plants are very tender, so much so that we have secured only one crop in five years.

Maxwell's Early: Equal to the Lovett in size and quality, but even more tender. It seldom passes the winter without injury in this latitude and has never given a full crop here.

Rathburn: Not fully tested as to hardiness, the winters not having been severe since it was planted. The plants have made a good growth, but can hardly be called vigorous; the berries are medium to large and are produced in considerable abundance. If sufficiently hardy it will no doubt prove valuable.

CURRENTS.

North Star: This variety has now been long enough before the public to become well known. It is an excellent variety and deserves a good share of the praise which it has received, but it can hardly be said to fill a place not already occupied. It is about equal to the Victoria in vigor and productiveness, but a trifle smaller and less attractive in appearance. It is likely that the Victoria will still be the favorite with most planters; at least it will not be superseded by the North Star.

Pomona: This is fully equal to the Victoria and perhaps superior in length of bunch. It appears to be very vigorous and prolific, although not fully tested here. It is deserving a trial.

Wilder: Not fully tested but seems to be even more promising than Pomona. The plants are very vigorous and prolific; the bunches are large and the berries nearly equal in size to the Cherry. On the whole, it is a very promising variety.

The old and well known sorts, Cherry, Fay's Prolific and Versailles still hold first place as regards size. None of these are strong growers and all are moderately prolific, only. Fay's Prolific probably ranks first, although it is by no means satisfactory in all localities.

GOOSEBERRIES.

Columbus: A large, yellow-fruited sort. Bush rather compact in growth and fairly prolific. Foliage and fruit quite subject to mildew, which is easily kept in check by spraying with Bordeaux mixture. Not as sweet as Industry, but very good.

Chautauqua: Plants moderate in growth and fairly prolific, but quite subject to mildew. Berries large, greenish yellow, of fair quality but not equal to Industry. Possibly as valuable as Columbus but hardly superior to that variety.

Crown Bob: A well known English sort, of large size and excellent quality. Rather more prolific and vigorous than Industry. Needs spraying to retain the foliage, but is not difficult to keep in a healthy condition with Bordeaux mixture. Should be included in the list if this class is desired.

Industry: This variety is now well known and needs but little comment. It is not a strong grower and does not seem to be adapted to widely varying conditions. It needs spraying in order to retain its foliage. Under favorable conditions it is quite prolific and the berries are large and of excellent quality, but with a thick tough skin, like most varieties of the class. It is one of the earliest to ripen.

Puyallup: A large, green-fruited sort, probably of European origin. The plants are rather more vigorous than the Industry and the berries are about as large. Somewhat subject to mildew, but less so than the Industry, and, on the whole, more easily grown than that variety.

Portage: This resembles the Puyallup, but is probably distinct, certainly so in origin. It seems but little inclined to mildew, although it may not be exempt from the disease. It is a promising variety.

Pearl: A variety of recent origin, somewhat resembles the Downing. The plants are quite vigorous and very prolific; berries are medium size, from one-half to three-fourths of an inch in diameter; greenish or yellowish white, with a thin skin and of good quality. A very promising variety.

Red Jacket: A very vigorous and prolific red-skinned variety. In many respects this is the most valuable of American sorts. The berries are medium to large, but rather variable in size. The foliage is almost free from disease and is not much benefitted by spraying. Comparatively late in ripening and rather acid, but, on the whole, a valuable sort.

Stine: A green-fruited variety, not yet introduced. The plants are comparatively healthy, although slightly affected by mildew, and prolific; the berries medium to large, being a little larger than the Downing, and of good quality. It may be ranked as promising.

Tree Gooseberry: This resembles the Mountain, but is evidently distinct from that variety. Moderately prolific; berries medium to large and of good quality. Of no special value.

Triumph: As we have it, not distinguishable from Whitesmith.

Whitesmith: Rather stronger in growth and more prolific than Industry or Columbus. Berries large, yellowish green and of excellent quality. Needs to be sprayed to keep the foliage healthy, but if properly cared for is easily grown and one of the most satisfactory of the English sorts.

SUMMARY.

Strawberries require a large quantity of water and this is usually more easily secured by thorough cultivation than by irrigation.

In an experiment in soil culture in 1897 there were found to be nearly five hundred barrels of water more per acre in the cultivated than in the hoed plot. This influenced the growth greatly, and in the succeeding season increased the crop from 10 to 68%.

In cultivation it is better to use a plank clod crusher, at least half of the time, rather than a cultivator all of the time.

Raspberry and blackberry plants are benefitted by continuous cultivation, during the time of fruiting, and to accomplish this they should be tied to wires.

The newer varieties of strawberries most highly commended are: Beauty, Berry's No. 2, Brownie, Clyde, Enormous, Glen Mary, Jerry Rusk, Noland, Orewiler, Sample, Superb.

The following varieties of raspberries are considered meritorious: Buckeye, Cumberland, Eureka, Haymaker, Kansas, Lotta, King, London.

The most desirable varieties of blackberries are: Early King, Eldorado, and Lovett in some sections.

The most promising varieties of currants are: Pomona and Wilder, while Fay's Prolific and Victoria are the most satisfactory of the old sorts.

Of gooseberries those most favorably mentioned are: Columbus, Chautauqua, Crown Bob, Industry, Puyallup, Portage, Red Jacket and Whitesmith.